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EARL K. LONG
Governor of Louisiana

ERNEST S. CLEMENTS
Director

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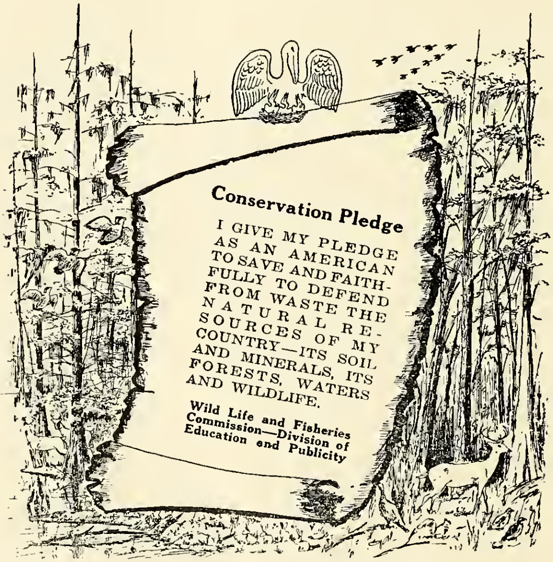
Conservation Pledge
I GIVE MY PLEDGE AS AN AMERICAN TO SAVE AND FAITHFULLY TO DEFEND FROM WASTE THE NATURAL RESOURCES OF MY COUNTRY—ITS SOIL AND MINERALS, ITS FORESTS, WATERS AND WILDLIFE.
Wild Life and Fisheries Commission—Division of Education and Publicity

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VOL. 8, No. 11

EDITORIAL

OCTOBER, 1956

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* * *

THE COVER

The rabbit was running to high grouud during the recent hurricane "Flossy" and to escape more water, perched on the only dry spot available—the palmetto leaf.
(Photo by Jock Britt)

By Ernest S. Clements
Director
Louisiana Wild Life and Fisheries Commission

How clever are you? Are you clever enough to outwit the law enforcement officer when you take more than the legal bag of game? Or are you, if you are disposed to be law abiding, clever enough to promote larger bag limits and longer hunting seasons so that you may satisfy your selfish desires? Are you clever enough to make it possible to have public hunting on game preserves or refuges so as to deplete the game on these areas?

If you are clever enough to do any or all of these things, you prove conclusively that you not only outwit yourself, but you steal from future generations and deny them the privileges that you inherited when you were born to or became a resident of Louisiana.

These are questions that only you can answer. Sincere conservationists are willing to sacrifice at least a part of the game and fish that they might be able to take in order that our future generations can have the same sports afield that Louisianians today enjoy, and sincere conservationists are willing to abide by laws or regulations established for the purpose of protecting and conserving our natural wildlife resources.

The first obligation of the Louisiana Wild Life and Fisheries commission is to look to the future as well as the present in their efforts to keep Louisiana's fish and game sufficiently in abundance so that present day sportsmen may enjoy their hunting and fishing and at the same time assure the generations still unborn the same privileges no matter how sincere the fish and game commission may be, or how efficiently they plan for the conservation of our natural wildlife, they must have the wholehearted support of everyone.

Hunting pressures increase phenomenally each year and perversely hunting possibilities dwindle because of habitat that is sacrificed to progress, and in many instances heedless and greedy destruction by hunters and fishermen whose only regard for fish and game laws is that they hope to avoid being caught.

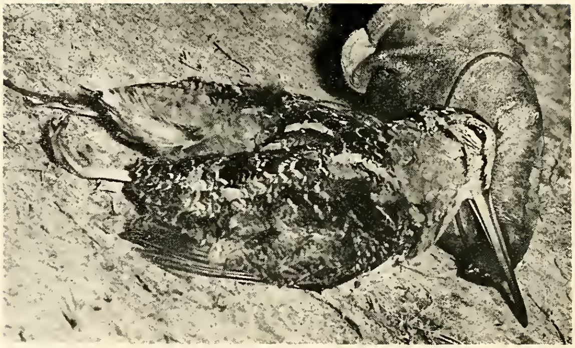
Restocking of fish and game is an expensive procedure, but regardless of the expense, restocking under carefully studied programs can be successful with the cooperation of the outdoorsman. This does not mean that you can continue to restock so as to provide an adequate supply of game birds and animals to satisfy everyone who insists on a bag limit every time he goes hunting. Louisiana has been blessed with an abundance of game through the years and perhaps that is one of the reasons why so many of this state's hunters resent being curbed, but it must be brought home to every man, woman, boy and girl, that if they do not consider the future, the generations of the future will have just cause for bitterness when they are born to a land where hunting has become a lost sport because of the thoughtlessness of their forefathers.

No doubt many persons complain against prescribed hunting seasons, fixed bag limits and restricted game preserves, but regardless of their resentment at these restrictions they must realize that state and federal laws as well as regulations of their wildlife and fisheries commission are looking to the future as much as they are considering the present.

Louisiana can, in the generations to come, provide happy hunting and fulsome fishing for everyone if everyone will now look to conservation, restoration and protection of our fish and game, and not depend solely on their wildlife and fisheries commission to do the job.

Louisiana's Wasted Woodcock Shooting

by W. McFadden Duffy



A prince among game birds, woodcock concentrate in Louisiana in tremendous numbers during the shooting season yet relatively few hunters go after them.

IN LOUISIANA, a state where hunting and fishing are widely pursued, it's hard to realize that woodcock shooting goes untapped. This is particularly difficult to reckon with when research indicates that a good half of the woodcock population of North America winter in Louisiana during the open season. With such a tremendous concentration of sporty game birds available for hunting, relatively few Louisiana hunters go after them.

I became a woodcock enthusiast a few years ago when I did a story about this fabulous shooting in Louisiana for Field & Stream magazine. Here's what converted me to hunting these tasty upland gamebirds that winter afternoon.

We swung off the paved highway and headed up a secondary road. Edouard Morgan, curator of the Louisiana Wildlife Museum, kept the car at a nice clip. Pea size gravel sprayed up by the tires beat a lively tune under the fenders.

We headed toward a thin finger of black gum and holly trees which were growing in the swampy bed of an old creek branch.

"The thing about woodcock hunters that's hard for me to understand," said Morgan, "is that they'll follow them all over the eastern states and then pass up the finest woodcock shooting in the country."

I agreed. I knew exactly what he meant. Back in 1949, after a number of introductions to woodcock which were accidentaly pointed by quail dogs, I fired off a letter to the U. S. Fish and Wildlife Service asking about woodcock in Louisiana.

Frederick C. Lincoln answered and some of the statements contained in his letter touched off a lengthy investigation.

"Most of the woodcock population spends the winter in the deep South," Lincoln wrote. "The great majority spend the months of December, January and February in the regions that include the States of Louisiana and Mississippi, most of Alabama, western Florida, southern Arkansas, and eastern Texas."

He pin-pointed it further by saying "breaking this region down still further, it is my opinion that fully 50 per cent spend the winter in Louisiana."

Now the surprising thing was this. There are few woodcock hunters in Louisiana.

I discussed this with Morgan as we hurried along a road through second growth pine. It seemed like quail country but I knew I was close to the secret and prized cover of one of the few Louisiana hunters who consistently hunt woodcock.

"May be one of the reasons you don't find many woodcock hunters here is because native hunters don't know how to spot woodcock cover and out-of-state gunners haven't heard about what we have down here," Morgan reasoned.

What he said was certainly true. In the course of my investigation I talked to hundreds of hunters. It was amazing how many of them had never seen any woodcock, much less hunted them.

Much has been written about woodcock although there is a great deal yet to be learned about this mysterious game bird with a fondness for nightlife and worms. What is known about them has been pretty well publicized and certainly no game bird should be easier to locate. It is the one American game bird with rigid habitat requirements and a fixed diet.

The woodcock's physical makeup, from the tip of its delicate pink feet to its tapered, sensitive bill, is designed for that specific diet. It follows that woodcock will be found in suitable cover near a source of food. And it's well known that over 90 per cent of a woodcock's diet consists of the garden variety of worm.

One veteran Louisiana woodcock hunter answered my questions about woodcock this way.

"If a man would take to digging worms to sell as bait during the spring and summer months," he said," and found a place where he could find enough worms to make it a profitable business, he'd make one heck of a woodcock hunter come fall."

Maybe that's a little far-fetched. It takes a lot more than merely locating a source of worms to find woodcock or to make a woodcock hunter out of a man. It does drive home the fact that it takes a lot of worms and suitable cover to keep woodcock around.

Now it's pretty common knowledge that the woodcock gets its worms with its elongated bill. That bill is a real engineering job. Besides having a number of nerve endings which make it super sensitive, it has additional modifications for probing. The upper part of the bill is so formed that the tip of the upper bill can be opened after being pushed into the ground. This allows the woodcock to locate a worm by sensitive probing, then latch onto it in a single operation.

Knowing woodcock cover and being able to read woodcock sign is rare among Louisiana hunters.

Mac waited patiently while I made several shots of him retrieving a woodcock.

I took some more pictures back at the car and then we headed home.

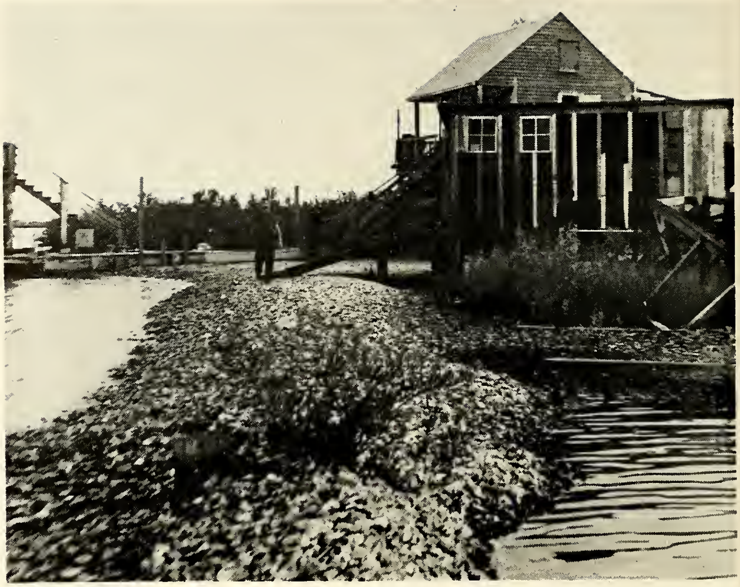
This business of worms results in two sure signs that can lead to fine woodcock shooting. One is a generous sprinkling of tiny holes in the ground, as if the earth had been peppered from afar with buckshot. Woodcock droppings are the other sign. They splatter out the size of silver dollars and dry white as chalk.

What Edouard Morgan said was downright true. Generally speaking, Louisiana gunners don't know how to spot woodcock cover and they don't read woodcock sign. As a result, fewer woodcock are killed each season in this woodcock paradise than are

(Continued on page 15)

OIL and OYSTERS

by James N. McConnell



Typical oyster camp in Grand Bay shows white shells along the leased oyster area by the camp. The dark areas near the water's edge was caused by leakage of oil from a nearby oil well. The oysters from this lease had been sold and were on the tables in New Orleans restaurants when the unpalatable taste of oil was found by numerous discerning customers. Needless to say, orders for oysters were cancelled until the conditions on the lease were investigated and steps taken to correct the conditions found.

AS CHIEF of the Oyster Division, Louisiana Wild Life and Fisheries commission, I feel that certain comments should be made concerning a recent article titled "Scientists Stalk Oyster Killers" reprinted from the Humble Way, a publication of the Humble Oil and Refining Company and distributed to various oyster growers and dealers. While admittedly this article is a popular summary of a tremendous amount of scientific work carried on by technical experts financed by various oil companies, it is our

Oyster leases in these bayous and bays were silted with varying depths of bottom sediments. Normal water circulation was changed on the oyster leases. Areas became inaccessible to the small boats of the osyster fishermen.

The dredge shown causing considerable turbulance in the water was used along many miles of a transmission company canal. Direct silting and turbulance was estimated to extend a distance of about 350 feet from the dredge . . . over adjacent oyster leases. (This was the visible effect).

opinion that there are still many questions about oyster mortalities and other facets of the industry which remain unanswered. This, of course, is not surprising in view of the complexity of the problem yet the tone of the article, especially in the conclusion, leads one to believe that all questions have been answered and that oil and other types of industrial expansion in our coastal area is totally guiltless of having any adverse effect on oysters. This seems to be a biased explanation absolving industry of blame without entering into all the facts.

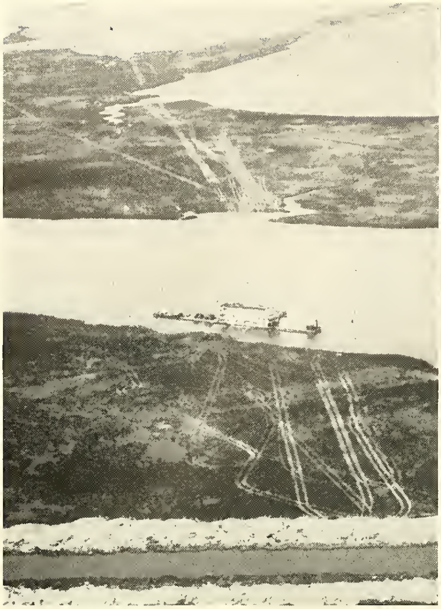
Oyster lessee is shown working in Bayou Fer Blanc. During the late spring of 1956, a seismic crew buried some 240 odd pounds of nitromon within the limits of his leased bedding grounds. The lease was well staked and reasonably well marked with signs. Wires were cut, but the high explosive remained buried. Accidental and deliberate trespassing on oyster leases by shooting crews, oil company boats and marsh buggies are a constant plague to the oyster man.

Draglines are shown here dredging a forty-five foot canal across the southern part of the state. During the spring of 1956 as many as ten draglines could be seen on this project, only one of the many constantly changing the ecology of the coastal areas.

One does not have to be an expert to fly over our coast and see how drastically industrial expansion has changed the characteristics and ecology of the coast. It is all too obvious that large areas, once oyster producing, have been physically usurped by oil fields. Canals and spoils have changed currents, caused silting up of bays from normal sediment and have effected the mean salinities of areas. Pollution from industry, finally brought under reasonable control only by constant state inspection, is still prevalent and accumulative. While admittedly no one has brought forth proof to date which indicates that oil or bleedwater is an immediate killer of oysters, this does not lessen the fact that it is not desirable to grow oysters in oil polluted areas nor does it alleviate the fact that oysters which absorb an oily taste from pollution are totally unfit for the market. Some of the more specific questions left unanswered or ignored may be summarized as follows:

1. It is brought out in the above article that oyster mortalities have occurred cyclicly the world over and that the summer mortalities caused by *D. marinum* is such an occurrence. No evidence is given, however, explaining why this particular disease became epidemic in the early 1940's coincidental with oil and industrial expansion on the coast when experimental evidence indicated its presence in Louisiana oysters as early as 1928. Admittedly industrial activity may have had nothing to do with the disease and the disease is evident in other areas along the east and gulf coast, but it would seem that the most important aspect of the problem; i.e., the factors controlling its epidemiology; is still far from clear.

2. It is pointed out that oyster production in Louisiana has been more or less constant between 650,000 bbls. to 800,000 bbls. since 1910, implying that the oyster industry is not declining.



A typical aerial scene along the southern Louisiana coast and adjacent water areas during 1956 . . . would show the seismic quarterboat, marsh buggy tracks crossing oyster leases . . . and the ever present dredgings in the foreground . . . .

Note the typical cut placed in levees blocking water areas. This was intended to allow free passage for boats . . . and circulation of the water to oyster leases nearby.

The writers of the article fail to point out, however, that since the advent of heavy summer mortalities in the 1940's that the quality of the production has dropped, more steam oysters are produced, fewer counter oysters (these mainly of poor quality) and the relative value of the production is considerably less than it should be.

3. It is stated that drilling mud per se has no effect on oysters in tank experiments. This would be expected when inert clean mud is used as a substrata for oysters. In actual practice such mud is often mixed with diesel oil, caustic soda, emulsifying compounds and possibly other chemicals. The question of the effect of such a mixture on oysters is not answered, yet we do know that, if nothing else, small amounts of such mud when mixed with oil causes oily unpalatable taste in oysters and makes them unmarketable.

4. The question of silting is brushed aside by comparing silt from dredging to the Mississippi mire silt load, turbidity from squalls, and normal water silt. The comparison is true as far as it is taken but no mention is made of the effect of diversion of currents, changing in current velocity, and the inadvertent formation of settling basins by indiscriminate placing of spoil banks with relationship to silting. It is obvious that silting will greatly increase from the dropping of the normal silt load if currents stop, or are slowed. The oyster man is all too well aware of this fact and selects a bed site well swept by currents in order to prevent silting. In many cases dredging and spoil placement well away from a bed will so divert currents that the normal silt load in the water will settle and cover the bed. There are no two better examples of such drastic silting than Lake Grande Ecaille and Bay Long (Ronquille). Both of these bays have become so filled that a boat cannot operate out of marked channels.

5. Geophysical activity is absolved of guilt in oyster mortalities on the basis that experimental tests of blast effects fail to show any definite mortality trend. Such tests were designed to test the blast effect and possibly later effects only. They did not take into consideration the effect on oysters on very soft bottoms, the damage that can be and is done in shallow mud bottom bays by boats and marsh buggies used in seismic work, and the carelessness of some seismic crews.

In conclusion let me state that because of the many problems still confronting the oyster men of our state in their untiring efforts to continue producing oysters in areas where mineral activity is steadily increasing, it is to be hoped that both the mineral interests and the Wild Life and Fisheries continue their efforts to find ways and means whereby the oystermen may still produce oysters in quality and quantity as they did in Louisiana before 1936.

When rising from water or land, the shoveller duck springs vertically with a strong upward bound and darts away with a swift, erratic flight, punctuated with sudden downward plunges.

A fish's nervous system is poorly developed and evidence indicates a hooked fish experiences discomfort rather than pain.

Red squirrel populations fluctuate markedly with peak numbers at five to six year intervals.

State Representative E. J. Grizzaffi of Morgan City, left, who was elected chairman of the Gulf States Marine Fisheries Commission at a meeting held in New Orleans recently, points to the Louisiana and Florida Coast waters as David Jones, Jr., of Naples, Florida, and retiring chairman of the Commission, looks on.

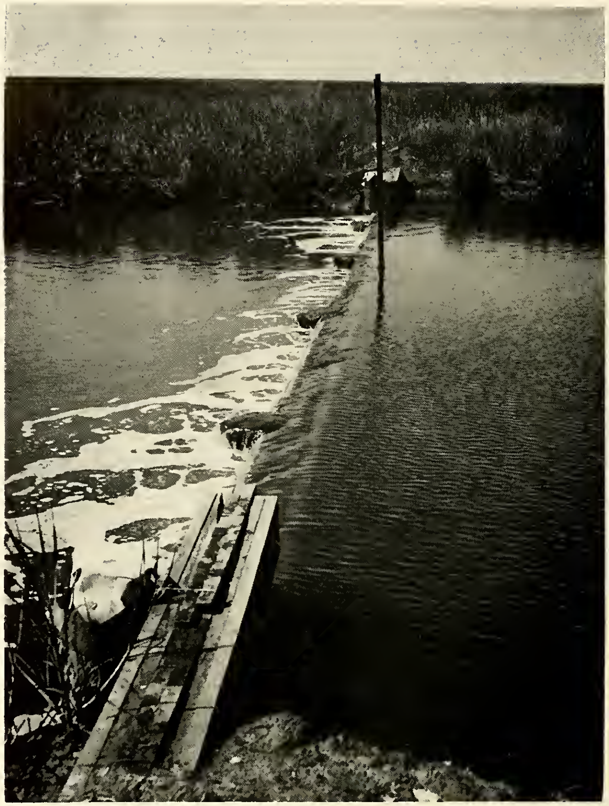
Gulf States Marine Fisheries Commission Meets In New Orleans

Photos by Steve Harmon

Director Ernest S. Clements of the Louisiana Wild Life and Fisheries Commission, who was the first Louisiana member of the Commission, welcomes the delegates to the New Orleans conference.

Newly elected members of the Gulf States Marine Commission are left to right: A. J. Harris, Ass't. Attorney General, Department of Conservation, Montgomery, Alabama; J. J. LeBlanc, Louisiana commissioner of Gulf States Marine Fisheries commission, also mayor of Lockport, La.; Ernest Mitts, Director, Florida State Board of Conservation, Tallahassee, Florida; Travis Bailey, Commissioner from Texas, Rockport, Texas; Dr. W. C. Holmes, Alabama commissioner, Foley, Alabama; Vern Merritt, Florida commissioner, Tarpon Springs, Fla.; E. J. Grizzaffi, Chairman of Gulf States Marine Fisheries commission, Morgan City, La.; W. Dudley Gunn, Secretary-Treasurer of commission, New Orleans, La.; David C. Jones, Jr., Florida commissioner, Naples, Florida; J. M. McConnell, former chairman, New Orleans, La.; and Howard T. Lee, Ass't. Director, Coastal Fisheries division, Texas Game and Fish commission, Houston, Texas.

MANAGING THE MYSTERIOUS LOUISIANA MARSHLANDS



Water control sill to prevent abrupt changes in tide and salinities have served well to produce improved three-corner-grass marsh and develop waterfowl food plants.

SOME time ago an article appeared in a national outdoor magazine outlining and appraising the great progress that has been made and is being made throughout the continent with respect to waterfowl and furbearer habitat improvement.

This article was very timely, for Louisiana, as it merely said the things that were uppermost in the minds of the conservationists throughout the state and particularly the coastal marshes. Many long-range and extensive plans had already been drawn up and the long road back up-hill had already been started, not only by the Wild Life and Fisheries commission, but the landowners and marsh operators who have all been equally important in conserving and managing the wildlife resources throughout the four million coastal marsh acres. However, it would have been a bit premature to assume at that time that plans alone had actually produced results that could be noticed by the muskrats and the ducks; but, at this time, two years have elapsed and achievements in the marshes have already surpassed all work previously accomplished.

Basically, this is what confronts us and also constitutes the foundation for our overall problems. Before the time of the white man in Louisiana, the Mississippi river, in its process of searching the course of least resistance along its lower reaches in south Louisiana, used a certain course or channel for a number of years then crevassed, spreading its rich silts throughout thousands of acres, finally building a new course and confining its flow within its own natural levees. Again it extended its mouth or another delta out into the Gulf, until the length of the course created such resistance against its flow that another crevass became inevitable somewhere up-stream at a point where the currents were constantly cutting away at the comparatively low and weak natural levees.

This type of change in the course of the Mississippi has occurred throughout the recent geological period, creating the basic foundation of the marshes from the Vermillion river area in Vermillion parish to the Lake Borgne and Chandeleur Island area of St. Bernard and Plaquemines parishes. Marshes lying west of the Vermillion river were created differently, and present other problems which will be discussed at a later date.

The new, rich mud deposits spreading out over wide areas readily gave rise to marsh vegetation. The weight of the deposits brought about rapid subsidance and compaction. Naturally as long as the river distributaries continued active in a given area, annual deposition compensated for the subsidance, and the deltic type vegetation flourished, creating new growths on each new deposit and allowing the roots, stalks and litter of the past growing season to become buried with the previous marsh floor. When stream courses were changed and new soil deposits were no longer available in an area, the subsiding action slowed up somewhat; however, a continued but retarded sinking took place. This slowing up process allowed the vegetation enough time to elevate itself each season on its own litter and roots, creating the vast "peat marshes" of southeast Louisiana. In many places this peat layer is forty to fifty feet in thickness, overlying the original river deposits. In many cases where poor peat producing vegetation dominated the marsh areas, a watery ooze persists between a comparatively thin peat layer and mineral soils. This type of area is difficult to manage and is locally called a "flotant" or floating marsh. The rapid oxidation of peat above water-levels prevents the elevation of such areas. This is the reason why all of the peaty-type marsh of south and southeast Louisiana exists at near sea-level or less than eight inches above. The absence of trees is due to marsh fires set by lightning or by man. The trees and shrubby vegetation exist only on the natural or man-made levees throughout such marshes; even man-made levees will "disintegrate" in a short time when constructed in a peaty area. In many places the spoils deposited from the Intra-Coastal canal are no longer visible in such areas.

Before the existence of man-made levees, which presently hold the Mississippi river in its bounds, the periodic course or channel changing and crevassing replenished basic soil deposits, tending to keep up with the rapid wave and tide eroding processes that now take place. Even though there is a strong tendency for the Mississippi river to occupy the channel of the Atchafalaya, it is held by levees that require constant maintenance, forcing the disposition of its deposits so far out into the Gulf that the marsh proper receives no noticeable benefits.

This results in extreme rapid erosion of the older sub-delta areas and in the loss of marshes themselves, allowing an increasingly greater salt-water intrusion.

The 1954 session of the Legislature appropriated funds for the diverting of river waters into the marshes of Plaquemines and St. Bernard parishes. From an over-all standpoint, presently this work must be viewed as a very important experiment.

The early unhampered process of the river's distributaries left the coastal areas of Louisiana with a broad band of flat marshland, ranging in width from 30 to 60 miles and extending from the swamps or wooded lands on the north to the Gulf. Within this band of marsh there were three distinct but over-lapping types of marshes. Adjacent to the swamps were fresh water marshes with stabilized water levels, not affected by tides; then the brackish areas affected somewhat by tides; and, on the outside, was the tidal-affected salt marshes bordering on the Gulf. Even up to 20 to 30 years ago all three of these marsh areas were about the same in acreage and each was dependent upon the other to create a balance that produced vegetation and animal life that nurtured probably the most abundant furbearer and wildlife population that could be found anywhere.

Since the Mississippi has been effectively controlled, the erosion of these marshes is almost unbelievable. Even the outer islands such as Chandeleur, Timbalier, Derniere, and others are being beaten back at a terrific rate. The marsh areas all along the estuaries and large lakes are disintegrating and being washed out to sea with each outgoing tide. Here behind the protective beaches is the place where wave action can really get at the peaty muck of the loosely-connected marshes.

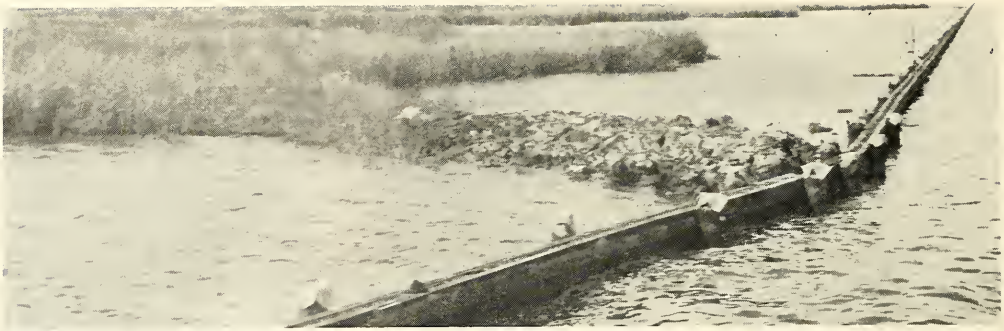
Dead cypress swamp (caused by salt water intrusion) resulting from the dredging of the Calcasieu ship channel.

The relentless eroding process was not a great cause for alarm even 15 years ago because its effect was not then noticeable nor affecting the state's fur crop. There was still plenty of duck and goose hunting territory for the number of hunters that were then hunting the coastal marshes. There seemed to be ample marsh in each of the three distinct zones. The encroachment of the Gulf merely shoved the salt marshes into the brackish and the brackish into the fresh, the richest and most important being the brackish three-cornered-grass marshes. Marsh improvement was relatively simple all along the twilight zone between the fresh and brackish areas as the entire Gulf of Mexico's encroachment served as a basic tool, making a few simple burning and ditching techniques all that was necessary to produce three-cornered-grass marsh from previously fresh areas.

A rapid succession of events since 1940 brought about the real awakening and the dawn of a new era of marsh management that will entail millions of dollars just to hold, repair and improve what we have left.

Before 1900 there were comparatively few muskrats inhabiting the coastal marshes. The earliest record of a dense muskrat population was found by Frank Ritchie several years ago while checking through some of the earliest engineering notes. One of the early land survey notes dated 1845 unmistakably described a muskrat

The type of revetment or fill required by landowners where pipe line canal cuts across into tide effected streams and lakes.



Revetment to break erosion effects produced by wave action. Reduced turbidity and tide fluctuation behind such structures makes it possible for submerged aquatics to come in naturally, producing waterfowl feeding grounds.

eat-out in the Lafitte area of Jefferson parish. French explorers before that time described nearly all of the marsh inhabitants but made no mention of the muskrat, nor the muskrat house, which is so obvious. John James Audubon, in 1850, while working in the New Orleans area on a mammal book did not make mention of the coastal muskrat. The earliest verbal record handled down by families was about 1870 in southeast Louisiana and 1898 in southwest Louisiana, and 1902 in Texas.

However, archaeologists have recently found their first muskrat bones while excavating an Indian mound located on Little Chenier, Cameron parish, and recent carbon tests on materials accompanying the bones indicate that they were deposited there approximately seven hundred years ago. Dr. George H. Lowery of L. S. U., will determine whether or not the bones are of coastal or the northern species that may have been brought in by migrating tribes. The northern muskrat and the turkey, two species common to America, were found by the first arrivals from Europe. It is assumed that the activities of the earliest hunters and trappers, in their pursuit of alligators by burning the marshes for accessibility and the trapping of raccoon and mink, all three known predatory to muskrats, developed better muskrat habitat in the marshes which resulted in their population increase.

By 1940 the trapping industry was nearing its peak. Every foot of the four million acres was controlled and managed for trapping purposes. There were probably more acres of brackish three-cornered-grass marsh at that time than at any previous period. Trappers, landowners and land operators themselves all strived toward one goal: to produce three-cornered-grass and peak 'rat populations. The cool, rainy cycle that was prevalent in early 1940 added the touch that was important to the 'rats' well-being. Annual severance tax records indicate that catches for the state ranged in the five to nine million figure from the period 1940 through 1947. Eighty percent of this annual catch was taken from the brackish marsh zone, the zone separating the salt marshes from the fresh. Muskrats are known to eat one-third of their weight in roots and vegetation daily and this delicately balanced zone was taking a terrific beating. Muskrat eat-outs were occurring right under the trappers' feet. As long as the money and 'rats were there, the landowner and trapper put up a good fight. The marshes were becoming so chewed-up and soft that walking in many areas was impossible; therefore, it was a paying proposition to cut ditches through the soft areas making pirogue and mud-boat travel possible.

During the extended period of abnormal rainfall, the ditches also served to carry off excessive water, bringing the rotten marsh-ooze of eat-outs to the sunlight and air during the early spring and summer. This treatment served to bring about the germination of the viable grass seeds that could not have germinated under water. The viable root particles of plants were also given a chance to reproduce. If the lands became overly drained by the ditch system, sills were placed at their outlets to regulate water-levels. Every condition affecting three-cornered-grass production in a brackish marsh can be manipulated within the zero to five inch water levels. In fact, in most marshes of southeast Louisiana it is practically impossible to hold more than five inches of water for extended periods of time.

Finally in 1947-48 the entire thing came to an abrupt end. Even with all the efforts, the muskrats finally got the best of the trappers. A severe hurricane occurred, gouging out thousands of acres of eaten-out, floaty marshes, throwing great chunks of debris, old 'rats nests and peaty floats right upon the highways in the New Orleans area. This, of course, allowed the salt zone to move right on into the original fresh marshes, breaking up the delicate salinity and tide balance of the entire area, opening up thousands of acres to abrupt tide action and salinity changes, a condition that none of the wildlife food plants can tolerate. That was just the beginning. A dry, hot cycle set in in 1948 and more or less continued until 1955. The muskrat takes dropped as follows:

1946-47	8,029,764
1947-48	5,794,317
1948-49	2,948,281

Hitting the all-time low of 1,011,202 in 1951-52, it has gradually moved upward to 1,383,114 in 1954-55. However, there has been a fair increase this past 1955-56 season.

Prior to 1948, great muskrat eat-outs existed all along the coast and many were not affected by the 1947 hurricane, but the prolonged drought period affected these areas in a different way. Trapping lands were abandoned by trappers and lessees due to the absence of 'rats. Their management work in the form of careful marsh burning and ditching and control structures were left uncared-for, resulting in the reversal, producing damaging effects to the best types of marshes. Only the finest marsh areas were worthy of excessive ditching and sill construction.

The prolonged drought period depleted the fresh water zone of its valuable water supply, leaving the eat-out, ditched and creve areas to suffer the direct effects of tidal waters carrying salinities well above normal. Such waters were allowed to penetrate the former brackish areas, many of which were open expanses of decaying marsh having no dense stands of vegetation, so important in the producing of the necessary "lag" on the flow of water in level marshes. This vegetation also serves to cut out direct sun rays. The hot summer sun daily evaporated much of the water, leaving concentrated salt deposits to leach into the soil, increasing salinities above the tolerance of any of the brackish marsh vegetation that formerly occupied this zone. Under this treatment some of the eat-outs persisted for several years, others returned to the more salt-tolerant species such as oyster-grass and wire-grass, presenting another management problem. Only the areas with the most extreme back-log of fresh water withstood the prolonged adverse conditions, the only two such areas being the Lafitte section with a back-log of fresh water extending clear up to Donaldsonville and the west and central Terrebonne parish marshes drawing water seasonably from the Atchafalaya river and having a back-log or fresh-water zone of several hundred thousand acres of floating, fresh "paile fine" marshes, known as the Penchant country. All the rest extending from Alabama to High Island, Texas, went out completely or suffered damaging effects in varying degrees. Even Marsh Island, normally consisting of forty thousand acres of three-cornered-grass, about half of the island's area, reverted to 80 percent wire-grass and other less valuable species. It is needless to say what happened to the 'rat population here, as the catch was about four hundred last season, and this is an area that normally produces a hundred thousand 'rats. The Delacroix Corporation lands, in St. Bernard parish, known as the richest fur pocket in the world, didn't even trap.

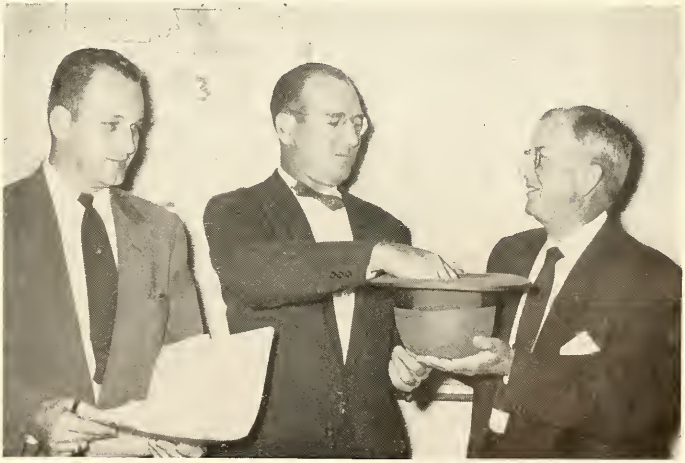
During this period of adversity in the marshes, industrial activity steadily increased. Oil exploration, transportation and pipe-line canals, oil fields and their canal systems and speed-boat travel all had their effects, tending to hasten drainage and salt water intrusion. Transecting intricate levee systems of winding bayous, cutting across Chenieres that held a backlog of fresh or brackish water and marsh-buggy travel in soft marshes left open drainage systems, allowing the more rapid escape of normal marsh water and intrusion of more saline waters in some instances. One might say that the cause is hopeless—how can anything be done with a situation that took many years to bring about? The presence of many millions of muskrats together with a prolonged drought, severe hurricane and an unprecedented industrial activity right in the heart of a wildlife area coupled with the inevitable erosion, as long as the Mississippi is held within its bounds are the problem. Just what can be done and who is going to foot the bill?

The biological facts pertaining to the basic phenomena of the Gulf coast marshes are pretty well tried and proven. Naturally further research is being carried on constantly. This is the first step: we know what conditions must be created to arrive at the desired results. "We" doesn't necessarily mean just the biologists. The majority of the practical land managers also have this knowledge. Managing marsh lands is a business that has been handed down for generations in the trapping areas. The majority of the people that have to do with the marshes are becoming management-minded and the major landowners are ready to foot the bill in most cases. Now that the furbearers can no longer carry all of the load, some of the proceeds from oil activity are going back into land repair and maintenance. The thousands of duck hunters are pitching in and doing their part in water and salinity control, as they know the conditions that produce waterfowl food plants; and these same conditions produce furbearer habitat also.

Widgeon grass coming in behind sill where water levels have been stabilized.

For instance, the Louisiana Land and Exploration Company, one of the largest marsh and landholders in the state, has recently set out upon an extensive marsh maintenance program. The majority of this property lies within the marsh areas that are subject to rapid erosion, tide fluctuation and salt water intrusion. Actual land losses from erosion have been accurately measured and outlined on maps. Strategic points in tidal channels have been located for the placement of water-control structures which are so designed as to stop erosion and adjust water levels and salinities in order to improve conditions for the three-cornered-grass growth. Suitable structures for both the prevention of erosion and proper control of tides have been experimented with and put into effect in a big way. Rules and regulations have been promulgated that are now made a part of the permits for any oil activity on their property. All canals and drilling sites must be incased within levees, if at all possible. Abandoned canals and dry-hole transportation canals must be dammed and maintained by the permittee. Areas that may be improved by canals and levees are studied and management devices made a part of the permits to be installed by the permittees.

Other landowners are aware of the need of properly managing the marsh and are taking steps to improve the furbearer and waterfowl habitat throughout the marsh belt.


Lloyd Abadie, vice president of the Louisiana Wildlife Federation, center, selects the names of hunters who made the first excursion to the Pass-a-Loutre public shooting grounds during the 1956-57 hunting season. Checking the operation is Ted Ford, left, who is in charge of the program this year for the Louisiana Wild Life and Fisheries commission, and John Campbell, chief of the Fish and Game division.

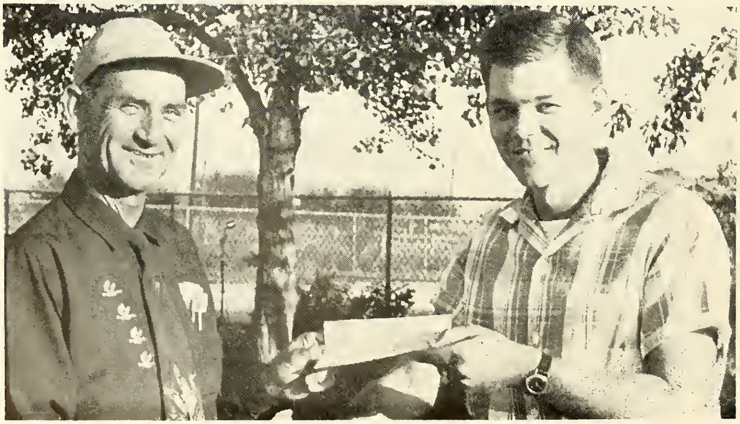
QUEENS AND QUACKS

Photographed by Jack Britt

Margi Moore of Crowley, Louisiana, who was crowned queen of the annual Rice Festival on October 18 and (right) Pat Peacock, 17 years old, queen of the American duck callers having won the junior world's championship in 1950, the women's world's championship in 1951, 1952, 1953, 1954 and 1955 as well as the Arkansas state championship in 1955, and the world open championship in 1955.

The world's champio
pionships than any
Chick Major, 1945 w
Peacock, the world's
pionship at Crowley

Harry Gates (left) presenting the $100 check to Raleigh Newman of Lake Charles who won the Louisiana state duck calling championship for the second time at the Crowley Rice Festival. On right below are J. D. Russell (left) and Ben Garrison, both of Baton Rouge, who finished second and third in the state finals.



: calling family of Stuttgart, Arkansas, who have won more cham-
or group in duck calling history (left to right) in the back are
ampion duck caller; Mrs. Major, world champion in 1950; Brenda
· champion in 1955 and winner of the International junior cham-
, and her sister Pat Peacock. The two Peacock girls are daughters
Major. In the foreground is Dixie Major.

elow) Oscar Abshire of Gueydan, who finished second, and Donald
of Trout, who placed third in the junior International duck calling
which was held for the first time as a new feature with the annual
estival at Crowley.

Brenda Peacock of the famous Stuttgart, Arkansas, duck calling family, who won the junior International duck calling contest at Crowley, being the only girl in the junior contest, receiving the Dudley Faulk trophy from Mr. Faulk of Lake Charles.

Golden Joseph Moss of Port Arthur, Texas, (left) who won the 1956 annual International duck calling contest at Crowley during the Rice Festival, being presented his championship trophy as well as other awards by Fred Parnell of Baton Rouge who was himself International champion in 1952 and world champion in 1953.

Therese Melancon of Rayne who was crowned frog derby champion when her frog jumped 11 feet 6½ inches.

Industrial Expansion On The Mississippi

by Ken Biglane

—*Photo by Jack Britt*

An aerial view of the Kaiser Alumnium plant, left, and Consolidated Chemical location, right, both in Baton Rouge and both users of the mighty Mississippi.

LOUISIANA, boom-state for industry, appears to be headed for an industrial revolution that could overshadow anything the whole country may have seen in the past. The East coast, long a center for large-scale process manufacture, is blinking its eyes with wonderment as is the rest of the United States, with the migration of every conceivable type of factory to this Deep South state.

The question arises, "What is the attraction initiating this mass movement?" One big answer is water—and lots of it. Louisiana's major stream, the Mississippi river, forms the state's eastern border from the Louisiana-Arkansas line down to West Feliciana parish. From then on to the Gulf it is contained entirely in Louisiana—a gigantic aqua-highway with an outlet to the foreign ports of the world through the Gulf of Mexico and with an upstream passage to the rich U. S. interior. But this is nothing unique—there are many coastal cities and near coastal cities that have similar waterways. What **is** unique is the quality of the water contained in the river.

As one passes over this big stream the trueness of its nicknames becomes most apparent. The "Big Muddy", the "Big Red", yes, it looks very uninviting even for putting out fires. But, modern processes easily remove the silt and other particles which gives the chocolate color to this large river and process engineers can readily recognize this great stream as a diamond in the rough.

We speak of water quality as an all defining or inclusive word. Yet, until defined for public health or industrial usage it has no meaning. Water quality simply means water fitness; fit to be used as process water, found in the conversion of raw products to finished wares; fit to be used as a public drinking water source; fit as a suitable environment for fish and other aquatic life.

With the location of so many industries on the banks of the river, the question arises, "Just how much waste can this river receive and still remain in a state of good water quality or fitness?" Two state agencies are primarily concerned with the health and well-being of these waters; they are: the State Department of Health and the Louisiana Stream Control commission. This latter agency is at present making plans to utilize funds allocated to the 48 states under the recently passed Public Law 660, the Federal Water Pollution Control Act. Louisiana's share of the allocated funds amounts to over $34,000. The state matches these funds with almost $20,000. It is proposed that this appropriation will go into the initiation of a general survey of the Mississippi to determine what effect, if any, the present discharges are causing, and what effect, if any, future discharges from the now existing plants will cause; possible effects by the effluents from the new plants, and what degree of treatment must any plant, locating on the river, utilize in order to keep the water in this river in the best possible condition at all times.

We feel that such a survey would accomplish many things. Primarily, the survey would aid in assuring the present water users a continued source of good water. It would be an insurance for the people of New Orleans and all other communities now using this river as a source of drinking water. It would entice new industries to locate on the river since a source of good water would be guaranteed, and, it would very likely bring to light new treatment methods that could be utilized by many different industries. Characteristics of wastes in large bodies of water will be determined so as to aid the Stream Control commission in solving problems of pollution abatement in other state water bodies. Last, but not least, it would assure those families who are now making a living from the stream's shrimp and fish resources, a continuation of their livelihood.

When a new plant decides to locate or when an existing plant decides to expand its facilities and thus increase its effluent, there is an orderly sequence of events that must be followed in order to secure a permit for discharge of wastes into a state stream. The authority for this action stems from Section 1435, Chapter 3, Part 1, of the Title 56, Louisiana Revised Statutes of

1950. This is a regulation requiring the submission of reports to the Stream Control commission for the discharge of industrial waste and for the construction or alteration of treatment works.

First, research and design representatives from the prospective plant contact the Division of Water Pollution Control, a unit in the Louisiana Wild Life and Fisheries commission and the fact-finding agency for the Stream Control commission. From this meeting it is determined exactly where the new plant will be located or to what degree an existing factory plans to expand. Unit processes are studied by the division's technical men and the industrial representatives are queried about every process that may lend contamination to the process waters. Since the division's staff is intimately familiar with almost every manufacturing plant in Louisiana today, they are prepared to recommend steps and designs that will cut pollutional loads to a minimum.

The next step is the submission of a report to the Stream Control commission. This board reviews all aspects of the chemical, physical, or biological effects the waste may incur and base their decision of approval or denial on these grounds. In predicting the effects of plant wastes, the Division of Water Pollution Control, through its modern chemical and biological laboratories in Baton Rouge, stands ready to perform many analyses that will enable both the Stream Control commission and the industry to understand the probable potency of a specific waste.

As long as the Stream Control commission continues to receive the splendid cooperation from the new industries coming into our state, Louisiana will always be a fertile field for process manufacture and still maintain its aquatic environments to a high degree.

Industry, too, is concerned about Louisiana's water resources for it realizes that the upstream neighbor's discharge directly concerns them. The major petroleum refiners have for some time financed two fellowships at Louisiana State University which allows for detailed studies of oil refinery wastes and the abatement of any pollution that may be caused by them. This group, the Louisiana Petroleum Refiners Waste Research Council, has regular meetings at their respective refineries and the knowledge gained from the inspection of their disposal facilities and the resultant exchange of ideas is invaluable to the state and industrial workers in the field of pollution abatement.

Although many of the big paper mills here in the state are served by a national organization, the National Council for Stream Improvement (an organization dedicated to reduce pollution loads by the paper manufacturing industry) they maintain, in addition, a large staff which does nothing else but work on disposal systems and effluent upgrading.

The chemical industry maintains research laboratories which constantly look for better methods of treating their plants' discharge.

The sugar industry, through cooperation with the state water pollution control agency, have improved the streams near their plants to such a degree that the septic conditions heretofore experienced in the grinding areas are held to a minimum. It is sincerely hoped that this industry continues to maintain in 1956 the high degree of success attained in pollution abatement by them in 1955.

Louisiana has come a long way in the field of maintaining water fitness. We still have a considerable distance to travel. Increased oil drilling activity opening new producing areas, old stripper fields—those areas producing upwards of 98 barrels of brine out of every 100 barrels of liquid pumped, paper mills, located in areas where land for waste impoundment is scarce, sugar cane grinding mills in the same predicament, careless process operators, interstate pollution by Arkansas, Mississippi, and East Texas. Yes, we still have a considerable distince to travel—but, with the dedicated staff of stream pollution personnel and with the highly regarded Stream Control commission, Louisiana will win this battle of water quality and insure for our children a place to pursue the pleasures offered by nature's wonderful gift—water resources.

LOUISIANA WOODCOCK

(Continued from page 3)

killed in any of the other woodcock states. Most of them are killed accidently when located by quail dogs.

The spot where Morgan stopped the car had been logged out years before. It is now haphazardly reseeded in pine. The trees are hardly more than ten or twelve years old. They fringe open fields of waist high grass and skimpy brush.

Fundamentally it is quail country. It would not have been difficult to find a covey within a mile of the car.

"This looks like quail country to me," I remarked as Morgan called his little American water spaniel from the back seat of the car slipped a collar and bell around its neck. Morgan stood up and pointed to something which hadn't particularly caught my attention.

"See that branch," he said. "I've never failed to put up some woodcock there. It's not my best spot. We couldn't get there now. Rain has the road too soft there. But this is a good place for woodcock."

The spaniel named Mac began methodically working the cover and we walked behind him. We were ankle deep in water in places. We moved slowly, ours ears tuned to the tinkling silver bell on the spaniel.

It was tough going in the matted growth. I trailed along as best I could, thankful for the silver bell on Mac. It was intended as an aid to the hunter in keeping track of the dog in the dense cover. It helped me keep up with hunter and dog.

Soon Mac gave a sharp little yelp and I heard the whirl of wings. I waited for the sound of a shot. Then the bell began to tinkle again.

I moved through the screening brush and found Morgan. He stooped down and pointed to a bright white spot near a little hummock.

"Woodcock dropping," he said. "Must have been resting here. Mac flash points them and I didn't get a shot. Heard the bird but didn't see it."

He kept the spaniel in close. The dog worked the hummocks. Suddenly the silver bell was silent. Then Mac gave a little yelp which I soon learned was his way of saying "bird up".

Morgan swung his .20 gauge and fired, I saw the bird go down. Mac moved out on command and came back with the woodcock. He stood patiently while I shot a few pictures. Then Morgan pocketed the bird and we moved along.

In the space of two hours we located and flushed a dozen or so woodcock. The little spaniel flash pointed them and yelped. In the dense cover Morgan seldom got a clean shot. Yet in two hours we were back at the car with four woodcock. I made a few more pictures, then we climbed into the car.

We talked about woodcock on the way home. I told Morgan about a report made by Phil Goodrum, a biologist with U.S. Fish and Wildlife Service, who had carried on quail and woodcock studies in Louisiana over a period of several years.

"You know what Goodrum found," I said. "He found quail hunters who reported flushing 12 to 35 woodcock during a six hour hunt. He also censused eight different localities in Louisiana and Texas. A total of eight miles of probable habitat yielded 42 birds. That's a lot of woodcock."

Morgan agreed. When quail hunters can accidently flush woodcock, an experienced woodcocker shouldn't have trouble at all in getting his rightful share of the long-billed twisters. In fact, he'd find himself in a woodcock wonderland.

As we neared New Orleans Morgan explained Mac's behavior. The spaniel was getting along in years.

"Mac's getting deaf," he said. "For years I used him only as a retriever. Then I found out he could find woodcock better than several cocker spaniels I've used. Too late to train him good on woodcock. This is probably his last season. He sure can find them, though."

I reached back and patted Mac's still wet coat. The tired spaniel looked up appreciatively. Maybe he was slowing down but he had certainly shown me that a woodcock hunter can find what he wants in this woodcock wonderland.

Restocking Louisiana's Fields and Streams

by Ernest S. Clements
Director
Louisiana Wildlife & Fisheries Commission

These are some of the quail that were liberated recently in the new quail restocking program inaugurated this Fall by Director Ernest S. Clements of the Louisiana Wild Life and Fisheries Commission, showing that they were fully matured birds.

FOR the first time since 1952 quail have been restocked in suitable areas in Louisiana. The fish and game division of the Wild Life and Fisheries commission has just completed liberation of 16,000 young bobwhites in terrain considered best suited for those birds; where there is suitable food and cover and where they can be regularly checked to determine their adaptability and survival.

Because of criticisms and denunciations of all quail restocking programs, these birds have been liberated as a sort of clincher to the argument that the proper program for quail restocking, and the proper type and condition of the new birds can be very successful factors in a well considered restocking effort.

Prior to the restocking program that began in 1948, it had been the custom to liberate pen-raised birds before they had sufficiently matured to be able to care for themselves. With the beginning of the four-year restocking program in 1948, it was considered advisable to release only fully fledged and matured birds. Despite all arguments to the contrary, Louisiana's quail population increased noticeably in many areas, and veteran bird hunters were quick to voice their commendation of the restocking plan at that time.

Larger coveys, larger birds and many more birds were the rule rather than the exception, according to reports during the 1949, 1950, 1951 and 1952 hunting seasons. Critics of these restocking programs searching for something on which to base an argument against restocking, were forced to fall back on the timeworn citation of band returns; in other words, all liberated quail were banded, but as is the case in virtually every condition of this kind, the brand return was extremely small. The wonder is that it isn't even smaller as only the very meticulous hunter gives any thought to the trouble of saving and returning bands. It is comparatively easy to juggle figures in such cases to provide an amazing argument, but it is equally as difficult to juggle the quail population in Louisiana to conform to the alleged fantastically low percentage of survival.

It would seem that most bird census takers, whether it be doves, ducks, quail, or what have you, use the 6% survival figure on which to base their reports. When asked how they arrived at this figure they invariably explain that it is based on the amount of bands returned since all liberated birds are banded.

The Louisiana bird hunter, however, pays little attention to the arguments of partisan biologists, prejudiced writers, etc. When there is an upsurge in bobwhite population the bird hunter is quick to realize it and just as quick to comment on it, although he spends little time studying the scientific conditions that may have caused it. To him the proof of the pudding is in the eating and since 1949 the steady increase in quail population in Louisiana has become an acknowledged fact, despite the fact that certain groups and their affiliates have carried on no program for the betterment of quail habitat, and only in extremely rare instances have they concerned themselves with anything except their annual harvest of our state's game birds.

The 16,000 new birds that have been liberated this fall, ranged in age from 10 to 18 weeks; they were fully fledged, able to fly as well as mature birds, and they were releasd only in localities where quail had been known to thrive.

Some persons may wonder why these 10 and 18 weeks' old birds are liberated during the fall months and very close to the opening of the annual quail season, The reasons for this are ample. To begin with there is considerable more food for quail during the late summer and fall months than at any other time during the year, and there is at the same time more cover for protection than they would have at any other time during the year. Opponents of the quail restocking program have continually made capital of the statement that these quail are being released solely to provide birds for the hunters during the quail season. This is far from the truth. Quail are never liberated in sufficient numbers in any locality to make any difference in the hunting during that season. There is a possibility that some of these birds will fall prey to hunters' guns, but that possibility is extremely small in comparison to the over-all bird population in these areas.

One of the principal reasons that these birds are liberated during the early fall months is because the bobwhites 10 to 18 weeks of age can be purchased for prices ranging from $1.37 to $1.50 per bird, and if we waited until these birds were a year old, they would cost us $3.00 each. In other words, they cost on the average, less than half in the fall than they would the following year, and at the same time being young birds they adapt themselves quicker to living in the wild than birds that have been reared the first year of their life in pens.

These conditions make it apparent that restocking of quail is not something that is done haphazardly if it is expected to be done successfully and it is not something that can be gauged by any set rule of thumb as so many partisan experts would have us believe. Neither is it advisable to liberate quail in a restocking program helter-skelter throughout the state as some persons request. Before any birds are assigned for liberation exhaustive study has been made as to the chances for these young quail to survive, mature and reproduce.

In each parish game agents have made surveys not only as to habitat conditions but as to the sincerity of the landowner in his desire to aid in the establishment of quail coveys in his fields and woodlands, and we will be guided by the reports from the various areas where the new bobwhites have been planted, rather than by the outmoded and never authentic band return rule, when we sum up the success of this new restocking effort.

The quail restocking program is not the only one that has been started this past summer and fall. A new deer restocking program will be underway by November 15, and it is hoped to trap and transfer at least 500 deer before next spring. It is also planned to import approximately 100 deer, mostly bucks, from Wisconsin this winter for liberation in selected localities throughout the state.

Honore Tate (left), F. F. LaFleur and Shelton Braud releasing a box of quail in selected habitat as part of the new quail restocking program.

The deer trapping problem which is the main feature of the restocking plan will be carried on by the Pittman-Robertson (federal aid) section in the fish and game division. Both box and net type traps will be used and in one locality at least a corral type of trap will be tried.

It is hoped to take surplus deer from Avery Island where 20 traps will be in operation; from Zemurray Park where 35 traps will be used; from Madison and Tensas parishes where it is planned to use at least 140 traps; from the Red Dirt Wildlife refuge where 80 traps will be set; and a corral, which will be used in either Madison or Tensas parishes where we believe this type of deer capture will be effective because of the high deer population.

(left to right) Shelton Braud, Assistant County Agent in St. Landry Parish, Fred Meyers, of the Fish and Game division and Honore Tate, game warden in St. Landry parish, checking a shipment of quail for release in that area. Mr. Meyers was in charge of the quail restocking program for the Fish and Game division.

This pair of quail took off in a hurry through the tall grass when they were recently liberated to add to Louisiana's bob-white population.

It is planned to release these trapped deer in parishes to be decided upon later, particularly those that are closed to hunting.

Because of the preponderance of does in some deer concentrations it is hoped that enough of these females can be taken to provide a better balance in the deer

The conventional box-type deer trap used in live-trapping deer for removal to areas where the deer population has become extinct.

A new type of deer trap that is being used in the live-trapping of deer in heavily populated areas showing a deer being removed for transfer to another part of the state.

herds, as well as to provide new stock for areas where deer are now sparse or entirely unknown.

When this trapping and restocking program for deer gets underway it will mark the greatest effort of its kind ever attempted in this state and there is no doubt that with the proper protection the transplanted deer will soon provide adequate herds in new areas that eventually will greatly add to the Louisiana sportsman's pleasure.

While great stress has been put upon the restocking of quail, the transfer and subsequent restocking of deer as well as the importing of new deer blood, the restocking of fish has not been neglected, as it had been from 1952 to the current year. Fish rescue work, which prior to 1953 provided millions of fish annually for restocking in Louisiana's inland waters, was resumed in September.

Since that time fish rescue crews have been taking fish from the barrow pits inside the levees along the Mississippi River that are reflooded yearly during high water, and have transferred these game fish, such as white perch, black bass, white bass and bream and stocked them in lakes, streams and bayous that are heavily fished each year. Up to the present time fish have been stocked in Lake Providence, Whiskey Chitto, Six Mile Creek, Calcasieu River, Bayou DeSiard, Ten Mile Creek, a small lake near Donaldsonville; a pit in Winchester, Lake Bruin, Lake Concordia and Tew Lake.

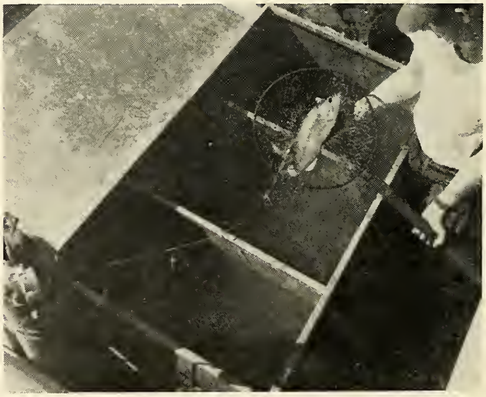
This rescue work is carried on in ponds, ditches, and pits that dry up during dry seasons and if not rescued the fish would die. By using a seine with a one-inch mesh, the fish rescue crews are able to capture these stranded fish, and by means of four fish transport trucks, each of which contains individual tanks in which oxygen is constantly added, and one large thermal truck which has been reconditioned, are transported to the waters where it is deemed restocking will help. The rescued fish range in size from the smallest small fry to bass in some instances weighing one to three pounds, and it has become a definite fact that in waters where fishing was virtually non-existent, the induction of these rescued fish has made splendid fishing areas out of these waters in a remarkably short time.

In addition to the fish that are rescued, fish are also available from the three state fish hatcheries. Last year the production in these hatcheries was more than 900,000 fish, and the expected production this year is over a million and a quarter fish, which will eventually be stocked in ponds and lakes throughout the state.

Fish rescue work is conducted, for the most part, during the summer and fall when the dry weather is most noticeable. Fish from the hatcheries are delivered during the winter and spring months with blue gills comprising most of the winter stock, and bass restocked during the spring.

Restocking of fish and game in Louisiana is not something that is done for the exclusive enjoyment of our sportsmen today or tomorrow. Under our present program and the one that was in effect from 1948 to 1953, restocking of all fish and game has been done with our future generations in mind. Louisiana has been extremely fortunate in a bountiful supply of fish and game far beyond the resources offered by many other states in this country, and it evolves on the present administration, the Louisiana Wild Life and Fisheries commission, as well as the future administrators of our natural wildlife resources, to assure our grandchildren and their grandchildren of enjoyable sport in fields and streams. To make this possible we must plan far in advance and we must

A fish rescue crew seining game fish to be transported to other waters in the Fish and Game division's revived restocking program.



A specially devised tank used in safe transport of game fish over long distances in the restocking program. Several of these tanks can be used in a pickup truck as they are designed to admit oxygen into the water in each tank to insure the safety of the fish being transplanted.

Liberating fish in one of Louisiana's lakes that have been rescued from barrow pits and transported to add to Louisiana's potential sport for her fishermen.

also have the encouragement and cooperation of Louisiana's men, women and children to assure the success of our conservation, protection, and preservation of our fish and game.

As our population increases our hunting and fishing pleasure increases apace and all these things must be considered in our plans for the future of our natural wildlife. Because of our wild turkey restocking program from 1948 through 1952, there are wild turkeys today in areas that have not known one of these birds for 50 years at least. Despite the fact that two open seasons on wild turkeys were permitted in 1955-56, the wild turkey population of this state is three to four times greater today than it was five years ago and if the season can be kept closed on these birds for another five years, I feel confident a remarkable recovery in wild turkey population will be noted.

During the present squirrel hunting season which opened October 19, reports from all over the state have been amazingly satisfactory with regard to bag limits and the reported population of the bushy tails. Although squirrels have been more or less plentiful in Louisiana through the years, we deemed it advisable in 1950 to import squirrels from the Wisconsin woods to mingle with the Louisiana native. The result of that induction of new blood is noticeable in many areas today and if game hogs and violators can be kept to a minimum through rigid law enforcement, the squirrel population can be kept extremely high in this state.

Despite the fact that surveys reveal that hunting pressure has increased by leaps and bounds during the last few years, Louisiana today offers more game and better fishing than it has at any time during the last two decades, and it is only reasonable to assume that the restocking program begun in 1948 has been the major contributing factor.

COMMISSION APPROVES MARINE FISHERIES LAB

At the November meeting of the Louisiana Wild Life and Fisheries Commission held November 20, the commission approved the construction of a thoroughly modern marine fisheries laboratory on the western end of Grand Terre, across from Grand Isle. This action was taken after listening to a report by Marine Biologist Dr. Lyle St. Amant who, for several months, has been making a survey of similar laboratories in other Gulf Coast states. Louisiana is the only state bordering on the Gulf of Mexico that does not have such a laboratory.

Dr. St. Amant pointed out that three locations were available, all in the Grand Isle area, and that a laboratory to fill all the requirements should be built in that area as all marine biologists agree that this location is the only one on the Louisiana coast with the proper salinity needed. He also pointed out that the Grand Isle area was virtually the center for the oyster, shrimp and fish industry.

Several reasons indicated that the new laboratories should be built on Grand Terre just back of the ruins of old Fort Livingston. The State of Louisiana owns 80 acres of land at that spot making it one of the reasons for selecting such a location; another reason was the fact that the walls of the old Fort act as a buffer to prevent tidal erosion, and that at that spot the sea is filling in land instead of taking it away. It is also the highest ground in that entire area and history proves that Jean Lafitte built his warehouses on Grand Terre instead of Grand Isle, because the ground was more solid and higher above sea level.

The commission in its approval stipulated that plans were to be made as soon as possible to provide not only a thoroughly modern, well equipped marine laboratory, as well as living quarters for the biologists to be stationed there and for the development of a safe harbor on the Barataria side of that point of the Isle. When completed it is expected that this new laboratory will be one of the finest of its kind in America as well as the best equipped and best staffed.

HOW MANY SHOT IN SHOTGUN SHELL?

Upland game and waterfowl gunners frequently wonder how many pellets of shot are contained in the shells they are using and ammunition manufacturers receive quite a few letters of inquiry in this regard. Henry P. Davis, public relations manager, Remington Arms Company, Inc., comes up with the following information:

"Many hunters wonder how many shot pellets their shells contain, but, naturally, few take the trouble to count them. Ammunition manufacturers are exceedingly particular about shot manufacture, however, for uniformity in shot sizes contributes greatly to uniformity in shot shell performances. Shot is manufactured to rigid size and weight specifications which have had industry-wide adoption through the Sporting Arms and Ammunition Manufacturer's Institute.

"It is easy for the shooter to figure out how many shot each load contains if he knows how many pellets of the various standard sizes are contained in one ounce. A close approximation of the number of shot per ounce loaded in Remington shells follows:

Shot Size	Number of Pellets Per Ounce
BB	50
2	88
4	136
5	172
6	223
7	299
7½	350
8	409
9	585
10	868
11	1380
12	2385

Don't Be A Statistic

It's Hunting time again. Several hunters will not live to see the new year. That is a grim picture but it is a true one. Accidents are made to occur. Only you, the hunter, can prevent them. Let this be uppermost in the minds of all hunters, lest they die in pursuit of their favorite pastime.

SHOCK FOR SHOCKERS

by Mel Washburn

The state game agents who participated in the capture of the fish shockers are (left to right) Joseph Rosenthal, Capt. Leonard New, who directed the entire operation, Vincent Purpera, and Capt. Charles Ventrella. On the extreme right is Sheriff W. C. Percy, who took charge of the prisoners after the arrests were made. The catfish in foreground represent the day's haul of the electrocutioners.

A great deal has been said, and written, about the streamlined law enforcement facilities of the Louisiana Wild Life and Fisheries commission. With its airplanes, fast boats, and automobiles, all radio equipped and synchronized into a short wave network that can encompass the entire state, it has been frequently said that fish and game law violators could be more easily apprehended.

That this is true was proven beyond doubt above St. Francisville recently when four men were arrested after one of the most exciting adventures in which automobiles, speed boats, airplanes, and the central radio control tower at Baton Rouge all played an important part. The chase and capture reads like a thrilling movie or TV script.

It all began about 10:30 one morning when two game agents, Captain Leonard New and Joe Rosenthal, were patrolling a timbered area near Tunica along the bank of the Mississippi river looking for squirrel law violators. Hearing motors running, they looked over the bluff into the river and saw two boats heading downstream, keeping as well concealed as possible, near the east bank of the river. Having had several reports that fish shockers were operating in that area, Captain New at once suspected the occupants of the two boats. Returning to his automobile, the captain contacted the Wild Life and Fisheries commission radio tower at Baton Rouge and asked that any law enforcement units in that area contact him at once by radio.

Within seconds Nelson Summerall, pilot of the airplane assigned to the Fish and Game division of the commission, contacted Captain New by radio and volunteered any assistance he might be able to give. He also informed Captain New that he could be over the river location within five minutes and that he could stay aloft until dark, and that he would be happy to act as "spotter" and report the activities of the four men in the two boats under suspicion.

As soon as Captain New finished his conversation with pilot Summerall he was contacted by Chief Louis E. LeBlanc of the law enforcement division, who was driving into Baton Rouge when he heard the captain talking to Kenneth Smith in charge of the radio tower. Chief LeBlanc told Captain New to work out his own plan of action and that he would see that he got all of the cooperation possible. The chief then informed the radio tower operator to stand by for any messages Captain New might want delivered.

By this time the airplane had arrived at the scene and was reporting to Captain New giving, as it were, a dramatized play by play description of the men who were by that time busily engaged in their unlawful electrocution of fish.

Realizing that he needed a boat to get to the men, Captain New began using his radio again and within a few minutes had contacted Alfred Couvillion and Vince Purpera, Jr., game agents in Pointe Coupee parish on the other side of the river. As soon as he had explained what was happening to Couvillion and Purpera, Captain New contacted Captain Charles Ventrella whose district was further up the river and asked him to come down to lend what aid he could.

In a short time Agents Couvillion and Purpera had located the fish shockers farther down the river and after watching them for a few minutes reported by radio to Captain New and told him they were going after a boat. Fortunately, they were able to borrow a fast boat within a short time and headed down the river toward the violators.

While all this was going on Pilot Summerall kept circling and broadcasting the activities of the suspects.

Chief LeBlanc who had headed for the scene of action as soon as he heard the first radio call from Captain New, was able to keep a vivid picture in his mind of just what was going on, especially after Agents Couvillion and Purpera obtained a boat and headed for the shockers.

The four violators were so busy scooping up the fish stunned by their electrical device they paid no attention to the boat rapidly nearing them and as there was nothing about the craft to identify it as a law enforcement unit, none of the violators realized their danger until the agents' boat was alongside and Purpera had jumped into the nearest boat, at the same time identifying himself.

As he did so, the other boat took off in a burst of speed in an attempt to get away and for several minutes there was a real boat race which gave the airplane pilot still another opportunity for dramatization. In no time at all Couvillion overhauled the fleeing boat and within a short time both boats with the four men were beached on the bank of the river, about halfway between Morganza and St. Francisville.

The captured men were Percy Edward DeLatte and Alton Wesley of Watson; Marvin D. Allen of Kentwood, and Glen W. Underwood of Denham Springs.

By the time the four prisoners had been brought ashore and their truck, which they had hidden in the timber, had been found, Chief LeBlanc had arrived on the scene as had Sheriff W. C. Percy of West Feliciana parish. The prisoners were turned over to Sheriff Percy and were placed in jail in St. Francisville until they made bond of $1,000 each.

A total of 600 pounds of catfish, the four men had taken that day, was found in the two boats and were given to the hospital at Jackson and the Catholic Sisters' home at New Roads. The largest catfish weighed 52½ pounds and there were very few smaller than 5 to 6 pounds.

When the prisoners learned of the various law enforcement facilities that had been used to bring about their capture one of them looked ruefully at Captain New and said:

"We didn't have a chance in the world to get away, did we?"

Chief LeBlanc, who virtually had a ringside seat for the entire performance, said it was a neat job of co-ordination and direction by Captain New; quick thinking on the part of Agents Couvillion and Purpera in obtaining the right kind of a boat in short order; splendid guidance afforded by the airplane pilot Summerall, and the alertness of the radio tower operator Kenneth Smith, all synchronizing into a highly effective job of difficult law enforcement.

The capture of this quartet of fish law violators, although spectacular, is only one of many such incidents in which the work of the personnel of the law enforcement division was successful. Since July 1, 538 arrests have been made by game wardens working under the direction of Chief Law Enforcement Officer Louis LeBlanc, and in many of these cases Chief LeBlanc himself participated in the actual apprehension of fish and game law violators.

Much stress has been placed on the fight against the electrocution of fish with the result that 35 violators have been brought to book during the last four months. No partiality has been shown, however, in the enforcement of all fish and game laws. Proof of this is the fact that more than 100 violators of shrimp trawling regulations have been captured; 47 night hunters have been booked; 87 persons have been arrested for hunting squirrels during the closed season; 30 were booked with hunting doves in closed season; 28 for hunting rabbits in closed season; and 34 for taking game fish with illegal tackle.

These figures prove that there has been no let up in the enforcement of Louisiana's fish and game laws. When it is considered that only six of the 538 total of violators were charged with fishing without a license, the figures prove that there has been a decided step-up in the enforcement of all fish and game laws and now that Louisiana's game wardens have learned to take advantage of their modern facilities such as radio, airplanes, fast boats and capable personnel, even more effective law enforcement is in prospect.

Broken down into various classifications, the arrests and convictions since July 1 are:

ARRESTS MADE SINCE JULY 1, 1956

Type of Violation	Total
Angling without license	6
Commercial fishing without license	2
Selling fish without license	4
Electrocution of fish	35
Trawling without license	5
Trawling with over 50-foot trawl	1
Trawling at night	3
Trawling in closed waters	82
Possession of undersized fish	3
Possession of over limit of game fish	1
Possession of undersized shrimp	20
Possession of undersized crabs	2
Hunting mig. waterfowl closed season	15
Hunting on state preserve	4
Hunting without license	26
Hunting at night	47
Hunting with unplugged gun	16
Hunting quail in closed season	7
Hunting squirrels in closed season	87
Hunting doves illegal hours	5
Possession over limit of doves	11
Hunting doves in closed season	30
Killing doe deer	5
Hunting deer in closed parish	8
Hunting deer in closed season	7
Hunting deer on public roads	4
Hunting rabbits in closed season	28
Hunting and killing grosbec	3
Hunting and killing egrets	1
Fishing game fish with illegal tackle	34
Fishing commercial fish with illegal tackle	15
Fishing without non-resident license	13
Hunting fur bearing animals with gun	3
Hunting from power boat	19
Blocking of stream	2
Transporting fish out of state illegally	1
Possession over limit mig. waterfowl	6
Possession over limit squirrels	1
Trapping out of season	2
Firing feeding and breeding grounds	1
Hunting fur bearing animals with dogs	1
Grand Total	538

RECORD NUMBER OF HUNTING LICENSE FOR DUPLICATE

Persons who lose their hunting license or any part of the license may be issued duplicates, announced H. Roger Hunter, Jr., supervisor of revenue for the Louisiana Wild Life and Fisheries commission.

If a person loses his license, or if they are rendered useless in some way, that person may apply for a duplicate by giving the number of the original issued license.

Hunter urged all license holders to jot down the number of their hunting license because it will expedite the issuing of a duplicate by the Louisiana Wild Life and Fisheries commission.

NUTRIA TRAPPING SEASON APPROVED BY COMMISSION

Following the suggestion of State Representative E. J. Grizzaffi, Director Ernest S. Clements and the members of the Louisiana Wild Life and Fisheries Commission approved a change in the opening of the nutria trapping season for the 1956-57 trapping dates to make the opening of the nutria season coincide with that of the muskrat season. As a result of this action, both the muskrat and nutria trapping season will open on December 1 and close February 25, 1957.

Representative Grizzaffi requested this change because, he said, a great number of muskrat trappers found nutria in their traps and they felt it would a waste to throw away the nutria until the December 15 opening, and that by making the opening dates coincide, the trappers could salvage something when they found nutria in their muskrat traps.

Capt. Charles Ventrella, Game Agent Alfred Couvillion and an unidentified man, stand in the boat that was used by the fish law violators.

WORLD'S FIRST SALT WATER FISH SANCTUARY

Myles Patureau, inspector for the oyster and water bottoms division of the Louisiana Wild Life and Fisheries commission, uses instrument to properly locate positions where buoys are to be placed.

Each buoy is lettered and numbered so that it can be properly identified at all times.

THE 1954 assembly of the Louisiana Legislature created by law the first salt-water fish sanctuary in the world. The passing of Act 476 which created the sanctuary marked the successful culmination of the efforts of south Louisiana sportsmen over a period of years to prohibit all seining and shrimp trawling on the New Orleans side of Lake Pontchartrain as well as in the Rigolets and Lake Catherine, but until this past month there has been no permanent marking of the boundaries of this sanctuary that extends four miles from the New Orleans lakeshore.

The closed area, starting from the 17th Street Canal at East End extends due north four miles thence eastward parallel to the New Orleans shoreline, maintaining the four mile distance all around the lake and northshore to a point four miles southeast of Goose Point.

Efforts have been made from time to time to mark the boundaries of this sanctuary by using poles stuck into the lake bottom, but none of these lasted much longer than it took to put them down, and the law enforcement division of the Louisiana Wild Life and Fisheries commission was finding it more and more difficult to enforce the sanctuary regulations due to the fact that the outside boundary was so hard to determine.

When Director Ernest S. Clements took over on May 31, he soon learned of the boundary difficulties and made plans to establish a definite and permanent system of buoys. Higgins, Inc., was able to provide an ideal marker. It is a buoy constructed especially for this purpose, is of light weight, and will minimize damage if collided with. It is made of fiber glass, styrofoam and a steel plate with a hook and counterweight. It is painted an international orange with white horizontal bands and is easily discernible in rough weather.

It was necessary to obtain the approval of the U. S. Coast Guard because of their regulations regarding the marking of navigable waterways, then the "Albacore", of the Louisiana Wild Life and Fisheries commission was put into service to put out these markers with Myles Patureau in charge using navigation and marine survey instruments so that the buoys would be set in strict accuracy with regard to their distance from shore. A cement weight of 80 pounds and a suitable iron chain was used to anchor the buoys in place in average depths of 11 feet of water.

Patureau and assistant find location range and places buoy in position.

The white and orange buoy stands out after being placed in the proper location.

Exposed to wind and current, these buoys are liable to drift a few feet in any direction and therefore it is not wise to use them in navigating or piloting craft that may be plying the lake. Neither would it be wise to be found seining or trawling for shrimp inside this sanctuary boundary. It is strictly off limits for all types of fishing except by sportsmen and no netting of any kind is permitted with the exception of cast nets operated by hand for the taking of shrimp along the seawall in season.

Thus the first saltwater free sanctuary has been established by boundary as well as by law with a bright series of orange and white buoys one mile apart, the required four miles from shore.

The flight of the Canada goose is heavy but powerful. It averages about 55 miles per hour. To cut down air resistance, Canada geese usually form a V-shaped flock. These magnificent migrators sometimes negotiate a non-stop flight of hundreds of miles.

The 1955 Hunting—Fishing Report

(Editor note: This is the second and concluding installment of a nationwide economic survey of expenditures and number of participants in recreational hunting and fishing activities throughout the nation. The survey was completed at the direction of the U. S. Fish and Wildlife Service).

Total expenditures for fishing and hunting combined amounted to $2,850,979,000 during 1955. This was an average of $114.42 for every sportsman. A breadkown of the expenditures follows:

Equipment (hunting and fishing):	
Specific	$ 594,584,000
General	687,708,000
Total	1,282,292,000
Trip:	
Food	144,587,000
Lodging	88,951,000
Automobile transportation	365,799,000
Other expenses	699,457,000
Total	1,298,794,000
Licenses and stamps	77,175,000
Leases and privileges	3,299,000
Duck stamps	4,114,000
All other expenditures	185,305,000

TRAVEL

The survey shows that 31.6% of all fishermen took trips of more than one day, and 20.7% of all hunters took multi-day trips. The typical fisherman traveled 319 miles during 1955 in pursuit of his sport, and the typical hunter traveled 206 miles. A breakdown of automobile mileage is as follows:

Fresh-water fishing	6.5	billion	miles
Salt-water fishing	1.2	"	"
Total	7.7	"	"
Big-game hunting	1.0	"	"
Small-game hunting	1.4	"	"
Waterfowl hunting	0.3	"	"
Total	2.7	"	"
Grand Total	10.4	"	"

Automobile expense, which totaled $365,799,000 for hunting and fishing combined, was calculated on the basis of 3½ cents a mile for actual operating costs (gas, oil, maintenance, and tires), eliminating depreciation, insurance, licenses, etc. (American Automobile Association Information Bulletin No. 93, March 22, 1955). For example, if the expense was divided among three persons on the same trip, the amount applied to one fisherman was 1-1/6 cents per mile.

MISCELLANEOUS STATISTICS

Breakdown by density of population: The survey statistics show that 21.2% of the population either hunted or fished or did both in 1955; 17.6% fished, and 10% hunted. In big cities 10% were fishermen and 6% were hunters; in towns 21% were fishermen and 12% were hunters; and in rural areas 21% were fishermen and 16% were hunters. Of the estimated 48,389,000 households in the United States in 1955, the report shows, 16,848,000 households (35%) had either a hunter or a fisherman or both. Again bearing in mind that many individuals *both hunted and fished,* it was found that 1 of every 3 households had at least 1 hunter or fisherman; 1 of every 4 households had at least 1 fisherman; and 1 of every 5 households had at least 1 hunter.

In rural areas, every other household had a fisherman or hunter. A breakdown by population densities shows that 17% of the population of large cities, 29% of the population of suburbs, 39% of the population of towns, and 48% of the population of rural areas hunt and/or fish.

A total of 566,870,000 man-days was spent hunting and fishing during 1955. A breakdown shows:

Fresh-water fishing	338,826,000	man-days
Salt-water fishing	58,621,000	" "
Total	397,447,000	" "
Small-game hunting	118,630,000	" "
Big-game hunting	30,834,000	" "
Waterfowl hunting	19,959,000	" "
Total	169,423,000	" "
Grand total, fishing and hunting	566,870,000	" "

COMMENT

What group or segment of people benefit from this enormous yearly expenditure? All the people benefit in some way. Among those who benefit more or less directly are people engaged in the manufacture of firearms, fishing tackle, automobiles, trailers, and automotive equipment, tents, sports-clothes, boots, shoes, and optical equipment; owners and employees of hotels, motels, restaurants, gas stations, grocery stores, hardware stores, and sporting-goods stores; guides, ranchers, and many others engaged in various other occupations and enterprises. Farmers often benefit by sale of produce to population-swollen small towns and communities upon the advent of the hunting and fishing season.

The number of participants, the amount of money expended, and the sustained interest from youth to old age, all emphasize that hunting and fishing continue to be the most popular American sports. Apart from benefits to national health and well-being, it is evident that conservation actions are warranted purely on the grounds of national income, as well as for their recreational values to approximately 20 million adults and 5 million adults who fish and hunt.

Louisiana Hunting Regulations For 1956-1957

Resident Game Birds and Animals

BOBWHITE: December 1, 1956-February 10, 1957, inclusive. Daily bag limit 10, possession limit 20. Season limit 80.

WILD TURKEY: Closed.

SQUIRREL: October 19, 1956-January 5, 1957, inclusive. Daily bag 8.

RABBIT: October 19, 1956-February 10, 1957, inclusive. Daily bag 5.

BEAR: Closed.

DEER: November 15, 1956-January 1, 1957 inclusive. Ascension, Jefferson, St. Charles, St. James, St. John, Livingston. South of Highway 190 open, North of Highway 190 closed. Tangipahoa: Open South of Highway 190, North of Highway 190 closed.

DEER: December 1, 1956-January 10, 1957, inclusive. Assumption, Iberia, Iberville, Lafourche, Plaquemines, Pointe Coupee, St. Bernarrd, St. Martin, St. Mary, St. Tammany, Terrebonne, Vermilion and West Baton Rouge. East Baton Rouge: South of Highway 190 open, North of Highway 190 closed. St. Landry: Closed that part of Ward 4 bounded on the north by the T. & P. Railroad, on the south by the Missouri-Pacific Railroad at Krotz Springs, on the west by Guide Line Levee, and on the east by the Atchafalaya River.

DEER: December 1, 1956-January 1, 1957, inclusive. Concordia, East Carroll, Franklin, Madison, Morehouse, Tensas and West Carroll.

Avoyelles: Except that portion of Ward 1 from the Moncla-Archie Highway west to the Rapides Parish Line which will be closed.

Beauregard: East of Highway 27 (104) closed. West of Highway 27 (104) open.

Calcasieu: East of Highway 27 (104) closed. West of Highway 27 (104) open.

Catahoula: North of Highway 84 and west of Boeuf River and Ouachita River will be closed.

Grant: Open except that part East of Highway 165.

LaSalle: Closed except Ward 6 which will be open.

Natchitoches: Only the following described areas open to deer hunting: Those parts of Wards 6, 7 and 8 east of Hagewood, Provencal, Bellewood, Kisatchie, Leesville Highway La. 117 (or Coldwater Road) and North of the Kisatchie, Mink, Gorum Road La. 118 and outside the Red Dirt Game Preserve. That part of Ward 1 South of Highway 6 between Hagewood and Natchitoches. Ward 9 except that part lying in the Red Dirt Game Preserve. Ward 10, West of Derry, Gorum Road, Except that part lying in the Red Dirt Game Preserve.

Orleans: Closed except Ward 15, area bounded by Cutoff Road, Ammunition Dump fence, Mississippi River and Plaquemines Parish line will be open.

Union: Open except area west of Missouri-Pacific Railroad to Litroe, Dean, Hailes, Spencer and Sterlington which will be closed.

Vernon: Open except area east of Highway 171 which will be closed.

West Feliciana: Closed except Turnbull Island which will be open.

Winn: Open except that part Northwest of Highway 84 from Clarence to Winnfield and West of Highway 167 from Winnfield to the Jackson Parish line.

DEER: December 1, 1956-December 5, 1956, inclusive. Sabine: Only that part of Sabine Parish described below will be open to deer hunting: West of a line from Vernon Parish line north on U. S. Highway 171 to Florien, thence west on La. Highway 474 (old 537) to Dess and on to junction of Many, Negreet Highway La. 476 (old 536); north to Many, Negreet Road to junction of La. Highway 6 and thence southwest to junction of Zwolle, Alliance Highway La. 475 (old 143), thence to Zwolle and north on U. S. Highway 171 to DeSoto Parish line.

DEER: December 1, 1956-December 7, 1956, inclusive. Jackson, Claiborne: Only that part of parish between Highway 79 from Homer to the Arkansas line and Highway 9 from Homer to Arkansas line shall be open to deer hunting.

Migratory Water Fowl Season 1956-57

DUCKS: November 1, 1956-November 25, 1956, inclusive. December 7, 1956-January 13, 1957, inclusive.

Shooting hours: ½ hour before sunrise to ½ hour before sunset including opening day. Bag limit 4. Possession limit 8.

WOODDUCK: Closed.

Merganser: Only one hooded merganser may be included in the bag limit of 4 or possession limit of 8. Red-breasted and American mergansers are to be included in the daily bag possession limits.

GEESE: November 1, 1956-November 25, 1956, inclusive. December 7, 1956-January 13, 1957, inclusive.

Shooting hours: Same as for ducks. Bag limit 5. Possession limit 5. Not to include more than 2 Canada geese or its subspecies, or 2 white fronted (Speckle Belly) geese or one of each.

COOTS: November 1, 1956-November 25, 1956, inclusive. December 7, 1956-January 13, 1957, inclusive.

Shooting hours: Same as ducks and geese. Bag limit 10. Possession limit 10.

RAILS and GALLINULES: October 1, 1956-December 9, 1956, inclusive. Bag 15 (except Sora Rail which is 25).

WOODCOCK: December 12, 1956-January 20, 1957, inclusive. Bag limit 4.

DOVE: September 21, 1956-October 5, 1956, inclusive. December 1, 1956-January 9, 1957, inclusive. Bag limit 8. Shooting hours: 12 noon until sunset.

WILSON SNIPE (Jack Snipe): December 13, 1956-January 11, 1957, inclusive. Shooting hours: To be announced later. Bag limit 8. Possession limit 8.

Use of bait and live decoys prohibited. Hunters of ducks and geese who are over 16 years of age must have a federal waterfowl stamp attached to their state hunting license or old age permits. These may be obtained from U. S. Postoffice. Use of rifles, or shotguns larger than 10 gauge or capable of holding more than three shells, prohibited. The plug used in guns must be incapable of being removed without disassembling gun. Legal possession limits of resident game birds or game animals may be possessed up to within 30 days of the opening of the following season.

Licenses

HUNTING LICENSE, RESIDENT (Required of all residents between the age of 16 and 60. Those over 60 must have old-age permit.)	$ 1.00
HUNTING LICENSE, NON-RESIDENT (Required of all non-residents, except those under 16 years of age.)	Reciprocal with other states
TRAPPING LICENSE (Trapping seasons to be announced. Only residents permitted to trap.)	$ 2.00
FUR BUYER, RESIDENT	$ 25.00
FUR BUYER, NON-RESIDENT	$ 100.00
FUR DEALER, RESIDENT (Deposit $500.00 required)	$ 150.00
FUR DEALER, NON-RESIDENT (Deposit $1000.00 required)	$ 300.00

Ducks in flight over pinoak flats near Monroe in North Louisiana. (photo by Britt)